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[54] **METHOD FOR PRODUCING FLOCCULANT FOR WATER TREATMENT**

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[58] Field of Search **252/180, 181, 313.2; 210/724, 723, 716**

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,217,466	10/1940	Baylis	210/23
3,630,954	12/1971	Yates	252/313.2
3,867,304	2/1975	Mindick et al.	252/313.1
3,947,376	3/1976	Albrecht	252/313.2
4,110,212	8/1978	Krofchak	210/724
4,332,693	6/1982	Piepho	252/181
4,404,105	9/1982	Lockerente et al.	210/710
4,415,467	11/1983	Piepho	252/181
4,539,230	9/1985	Shimizu et al.	252/181
4,923,629	5/1990	Hasegawa et al.	252/181

FOREIGN PATENT DOCUMENTS

0340353	11/1989	European Pat. Off. .
542934	1/1932	Fed. Rep. of Germany .
971180	12/1958	Fed. Rep. of Germany .
2555980	6/1985	France .
159539	3/1983	German Democratic Rep. .
285112	11/1988	Japan .
618895	3/1949	United Kingdom .
1399598	7/1975	United Kingdom .

OTHER PUBLICATIONS

Chemical Abstracts, vol. 80, No. 16, Apr. 22, 1974, Columbus, Ohio, US; abstract No. 85261K.
Chemical Abstract 79(18):107904f Barni; A.

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[57] **ABSTRACT**

A flocculant for water treatment containing a highly polymerized silicic acid solution having a high concentration of SiO₂ and an extremely low concentration of alkali metal substance, and a method for producing such flocculant. The silicic acid solution is prepared by treating an aqueous solution of an alkali metal silicate such as water glass to remove alkali metal and allowing the solution to liquefy after once gelling. The flocculant may further contain a water soluble metal salt such as ferric chloride or ferric nitrate.

2 Claims, No Drawings